

CANADA.
DEPARTMENT OF AGRICULTURE.
ENTOMOLOGICAL BRANCH.
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Crop Protection Leaflet No. 3.

Cutworms and Their Control.*

Injurious insects wage a heavy toll on farmers, fruit growers, and gardeners. The annual loss from such pests amounts to many millions of dollars. Among the destructive insects, the cutworms are insidious enemies which necessitate prompt warfare if we would save the enormous quantity of food-producing plants which they destroy every year.

In general, cutworms are similar in appearance, being smooth, cylindrical caterpillars, about one inch or more in length, and in colour of some dull shade similar to the ground in which they hide during the day.

The moths, which lay the eggs from which the cutworms develop, are of a grayish or dull brownish colour, and measure with the wings spread, from about an inch to two inches in width. When at rest the wings lie folded over the body. Being nocturnal in habit they are seldom seen during the day time, but in the early evening they appear in search of the nectar of flowers. The eggs laid by these moths are pale in colour,



Young plant showing characteristic cutting habit of cutworms; cutworm on earth, above; cutworm coiled up in earth, below. (Original).

dome-shaped, and less than one twenty-fifth of an inch in diameter. They are deposited in clusters or masses on the leaves of trees, shrubs, weeds, grasses, etc., and some kinds even lay their eggs on the soil. They are chiefly active in June, July, and August.

* By Arthur Gibson Chief Assistant Entomologist, in charge of Field Crop Insect Investigations.

Injury by cutworms is mostly in spring when plants are young and succulent, but there are a few species which occur in destructive numbers as late as the middle of summer. As a rule, however, cutworm injury ceases before the end of June. As their popular name indicates, these caterpillars have the habit of cutting off the plants during the night, near the surface of the ground or a little below it. When they are present in numbers, in a garden or field, the plants will soon be seen to have been cut, or eaten off, and if an examination is made, the cutworm will most likely be discovered in the soil, coiled up, and just below the surface. Not all cutworms, however, feed in this manner; some climb up into fruit trees or such plants as currants, gooseberries, tomatoes, etc., and feed upon the foliage or upon the fruit. In fact, when they are excessively abundant, they will attack anything green and juicy. In such years some kinds assume the marching habit, so characteristic of the army-worm.

METHODS OF CONTROLLING CUTWORMS.

PREVENTIVE MEASURES.

Clean Cultivation.—The eggs of most of our cutworm moths are deposited soon after the adult insects appear in early or midsummer. As they are laid on weeds, or other nearby succulent vegetation or upon the soil or the remnants of crops, it is most advisable to plough deeply, in the early fall, all fields where cutworms have been troublesome. Such clean cultivation not only destroys many of the eggs and the young hibernating cutworms, but also numbers of other insects which winter beneath fallen plants, refuse, etc. Fall ploughing should always be practised where circumstances will permit, not only for the destruction of hibernating insects, but also because the land will be put into better condition for early spring sowing. In gardens and orchards, all remnants of crops, or other refuse, should be carefully gathered together and destroyed by burning.

Protective Bands.—In fields or gardens where such plants as cabbages, cauliflowers, tomatoes, etc., are set out, protection against cutworm attack can be had by placing a band of tin, or wrapping a piece of paper, around the stem of each plant at the time of setting out. Tin, of course, lasts longer than paper and is, therefore, to be preferred. Pieces about 6 inches long and 2½ inches wide are sufficiently large for this purpose, and can easily be made into a cylindrical shape by bending them around a broom handle. Old tomato or other tins, in which canned vegetables have been prepared, are useful for this purpose, and if thrown into a bonfire the tops and bottoms fall off, leaving the central piece of tin which, if cut down the middle, will be sufficient for protecting two plants. When paper is used, cut this into pieces about three inches square. The pieces may be threaded on to a loop of string, which may be tied to the box in which plants, such as cabbage and cauliflower, are taken to the field. About two inches of the paper should be left above ground.

To protect fruit and other trees from climbing cutworms, a band of cotton batting four inches in width may be fastened tightly around the tree near the bottom. The wire or strong string holding the cotton batting should be placed near the lower edge, so that the upper part of the band can be hung down, thus forming a sort of funnel, or cone-shaped mass of batting. Bands of tree tangle-foot are also useful in preventing the caterpillars from gaining access to the foliage, etc., of trees.

REMEDIAL MEASURES.

Poisoned Bait.—The poisoned-bran remedy is the one which is now used most extensively for the destruction of cutworms generally. This is made as follows:—

Bran	20 pounds.
Molasses	1 quart.
Paris green, or white arsenic.....	½ pound.
Water	2 or 2½ gallons.

Mix the bran and Paris green (or white arsenic) thoroughly in a wash tub, while dry. Dissolve the molasses in the water and wet the bran and poison with the same, stirring well so as to dampen the bran thoroughly.

Shorts or middlings in place of bran are also useful for cutworm control.

A simple formula for small gardens is one quart of bran, one teaspoonful of Paris green, and one tablespoonful of molasses, with sufficient water to moisten the bran.

The mixture should be applied thinly as soon as cutworm injury is noticed. It is important, too, that the mixture be scattered after sundown, so that it will be in the very best condition when the cutworms come out to feed at night. This material is very attractive to them, and when they crawl about in search of food they will eat it in preference to the growing vegetation. If the mixture is put out during a warm day, it soon becomes dry, and is not, of course, as attractive to the cutworms. In treating fields of hoed crops, such as beets, turnips, etc., a simple method is to have a sack filled with the bran hung around the neck, and by walking between two rows, and using both hands, the mixture may be scattered along the row on either side. When cutworms are so numerous as to assume the walking habit, the poisoned bran may be spread just ahead of their line of march. In gardens, where vegetables or flowering plants are to be protected, a small quantity of the material may be put around, but not touching, each plant. Fruit trees may be protected from climbing cutworms in the same way, but the mixture should, of course, not be thrown in quantity against the base of the tree, otherwise injury may result from the possible burning effect of the Paris green.

Under field conditions, 20 pounds of poisoned bran is sufficient to treat about 3 acres. Scattering the mixture thinly places it where it will reach the greatest number of cutworms, and when thus spread there is no danger of birds, poultry or live stock being poisoned.

Observations have shown that the cutworm moths very often lay their eggs on weeds, etc., on the higher elevations in fields, and that the young cutworms migrate therefrom to other parts. If such places are watched from time to time in spring, it may frequently be possible to control the outbreak by scattering the poisoned bait chiefly within such areas.

Fresh bundles of any succulent weed, grass, clover, or other tender vegetation, which have been dipped into a strong solution of Paris green (one ounce of Paris green to a pail of water), may be placed at short distances apart in an infested field, or between rows of vegetables, or roots, and will attract many cutworms and protect the crops from further injury. In Alberta the common weed known as Stinkweed has been successfully used. The bundles, also, should be put out after sundown, so that the plants will not be too withered before the cutworms find them. As in the case of the poisoned bran, they should be applied just as soon as the presence of cutworms is detected.

The above poisoned baits have given excellent results for surface-feeding cutworms, such as the Red-backed cutworm, the Striped cutworm, etc. For those kinds, however, as the Glassy cutworm, which feed almost entirely underground, these baits are, of course, of little value. For such cutworms it is important to keep the land to be used for grain crops the following year as free as possible from long grass and weeds. If this is done, there will be no tall vegetation to attract the female moths for the purpose of egg-laying.

Furrows or Ditches.—As a rule, when cutworms assume the marching habit, they are nearly full-grown and, of course, are very ravenous. In such instances, applications of poisoned bran have been extremely useful in stopping the attack. Severe outbreaks may also be largely controlled by ploughing deep furrows in advance of the line of march of the cutworms. The progress of the caterpillars is thus stopped, and when a furrow is entered by them, a log drawn by a horse may be dragged through it and the cutworms in this way will be crushed and killed. If a series of post holes

about a foot deep and about 15 feet apart are dug in the furrow, hundreds of the cutworms will fall into them, and they can then be easily killed by crushing them with the blunt end of a post, or a piece of fence rail.

Handpicking.—In small gardens, as soon as injury is noticed, the cutworms can, as a rule, be easily located in the soil, about an inch or so beneath the surface, and within a radius of a few inches of the plant, and destroyed by hand.

We shall be pleased to hear from any one concerning damage or trouble of any kind due to insect pests. No postage is required on such letters of inquiry when addressed:—

Dominion Entomologist,
Department of Agriculture,
Ottawa, Ont.

Such inquiries should be accompanied in all cases where it is possible by specimens of the insects. The insects should be sent packed with their food plant in a strong wooden or tin box to prevent loss in transit. Packages up to 12 ounces in weight may be mailed free, and every package should bear or contain the sender's name and address, and be accompanied by a letter.

OTTAWA, February, 1918.



